

# **Inyo National Forest**

**DRAFT**

## **Travel Analysis Report**

**April 2015**



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## Background and Objectives

Title 36 CFR Part 212, Subpart A, Section 5 requires each administrative unit of the National Forest System to, “identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. In determining the minimum road system, the responsible official must incorporate a science-based roads analysis at the appropriate scale and, to the degree practicable, involve a broad spectrum of interested and affected citizens, other state and federal agencies, and tribal governments. The minimum system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219), to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, and to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.”

The Travel Analysis Process (TAP) meets the requirement for incorporating a science-based roads analysis at the appropriate scale to help identify the minimum road system (36 CFR 212.5(b)(1)). Travel Analysis is not Subpart A; it is a step toward fulfillment of Subpart A. It will influence and lead to the proposed actions and environmental analysis that will identify the minimum road system. The purpose of the TAP is to inform future travel management decisions, but it does not designate the minimum road system. This analysis compiles existing scientific information and is a broad-scale, comprehensive review of the motorized transportation network.

The main objectives of the TAP are:

- Analyze how to balance the need for access with minimizing risks to important ecological, social, and economic issues related to roads.
- Describe transportation management opportunities and strategies in narratives, maps, and tables.
- Identify potential methods for achieving the minimum necessary road system for the Inyo National Forest.

The final product of the TAP is this Travel Analysis Report (TAR), which presents the data, analysis, and recommendations from the 2015 Travel Analysis Process.

## Chapter 1 – Setting Up the Analysis

### Analysis Plan

The analysis team followed the six step process for the TAP, as required in Forest Service Handbook (FSH 7709.55, Section 21). The six steps are as follows, and each step is explained in depth in each chapter of this report.

1. Setting up the Analysis
  - a. Identify the existing road system to be studied
  - b. Develop a list of data needs
  - c. Identify an interdisciplinary team and timeline for completion of the process.
2. Describing the Situation
  - a. Consolidate current land management and travel management direction, as well as existing site-specific decisions.
  - b. Consolidate information about existing easements, rights-of-way, and permits authorizing maintenance or jurisdiction of roads on the Forest by other entities.
  - c. Assess the current uses, access needs, environmental, social and other issues.
3. Identifying Issues
  - a. Identify the main issues surrounding the Forest's transportation system.
  - b. Identify every attribute that is evaluated for risk and benefit for each road.
4. Assessing Benefits, Problems and Risks
  - a. Identify criteria for each attribute to rank road benefit and risks
  - b. Use GIS analysis and knowledge of field condition to apply the criteria. Record all results in a GIS database.
  - c. Rank the roads for risk and benefit based on the GIS analysis
  - d. IDT reviews the rankings and modify ranks based on knowledge of field conditions.
  - e. Combine individual attribute ratings to assign overall risk and benefit rankings to each road
5. Describing Opportunities (potential changes) and Setting Priorities
  - a. Place roads into one of nine opportunity/priority categories based on relative risk and benefit rankings
  - b. Recommend opportunities and priorities for each of the nine categories. These opportunities and priorities can be used to inform future project National Environmental Policy Act (NEPA) analysis.
  - c. Identify roads "needed" and "not needed", based on the risks, benefits, opportunities and priorities
6. Reporting
  - a. Create a report that includes lists, maps, and narrative explaining the above process and results.

## Scale

The travel analysis was conducted for the entire area managed by the Inyo National Forest (INF), and includes all National Forest Transportation System roads on the Forest. It includes known existing roads that have historically or are currently being maintained by other entities, such as Counties or utility companies, when those roads are on land managed by the Inyo National Forest. It also discusses roads that are located on private, state, or other federal land that are necessary for public access to the Forest, though it does not make recommendations about changes to those road systems. It discusses Forest access needs on those roads. The analysis does not include opportunities to add routes to the system, because the 2009 Inyo National Forest Motorized Travel Management Record of Decision (Inyo

National Forest, 2009a) recently determined which unauthorized routes to add to the Forest system. The ROD was based on extensive analysis and public involvement and the Forest Supervisor did not find it necessary to revisit those decisions (unless the Forest has new information about a road). That process analyzed unauthorized routes inventoried on the Forest, and added those found to be needed to maintain a reasonable level of motorized access and opportunities on the Forest. Opportunities to add roads to the system in the future will be analyzed at a project level.

The TAP does not include motorized trails, nor does it include consideration of over-snow vehicle use. Over-snow vehicle use will be analyzed in a future document that will result in a decision (36 CFR 212, Subpart C).

The Forest has completed two other large-scale transportation analysis processes in the past 15 years. The 2009 Inyo National Forest Motorized Travel Management (“Travel Management”) project made a decision that designated a motorized transportation system (Inyo National Forest 2009a and 2009b). The 2003 Roads Analysis Report (Inyo National Forest 2003) identified benefits, problems and risks, described opportunities and set priorities for all roads on the Forest suitable for passenger cars (maintenance level 3, 4 and 5).

Forest Service Handbook (FSH) 7709.55, Chapter 20, Section 21.13 states, “Determine if any relevant analyses have already been conducted and if relevant data are available. Existing data and assessments should be used whenever they are accurate and available”. While all roads on the Forest are included in the TAP, it does not fully re-analyze roads that were analyzed in the 2009 Travel Management project or the 2003 Roads Analysis Process (RAP), unless the Forest has new information on those roads. If the Forest has new information that might change the analysis of condition, benefits or risk from roads already analyzed in 2003 or 2009, those roads are fully analyzed in this TAP. The 2009 Final Environmental Impact Statement (FEIS) and Record of Decision for Inyo National Forest Motorized Travel Management and the 2003 RAP are incorporated by reference into this document (Inyo National Forest 2009a and 2009b, and Inyo National Forest 2003).

The TAP also does not assign risk and benefit rating to roads under the jurisdiction of another agency, if those roads have a legal instrument in place assigning jurisdiction.

Excluding roads under the jurisdiction of another agency (with a legal instrument), and roads not on Forest land, the road system on the Inyo National Forest is about 2,890 miles long, with about 5,500 separate road segments recorded in the Forest Service roads database (which is called the Infrastructure database, or “Infra”). Of those, about 840 miles are shown as being maintained by another entity, either a county, a local entity (such as Los Angeles Department of Water and Power), a private party, or a commercial user.

Excluding the road segments previously analyzed in the 2003 RAP and 2009 Travel Management project, which are not re-analyzed here, this TAP fully analyzes about 2,110 road segments with a length of about 1,690 miles. The roads fully analyzed in the TAP are shown in color on the maps in Appendix G.

## How the Report Will be Used

The Inyo National Forest TAP, documented in this TAR, will assist the Inyo National Forest in addressing issues related to the roads system. The TAP will inform future analyses, specific actions, and decisions. The TAP can be updated as necessary when new information or new conditions could alter the analysis. Future updates to the TAR could be to a portion of the document to provide site specific information for a project level analysis, or the entire document could be updated to inform longer-range strategic plans.

## Relation to Forest Plan Revision

The TAP and this resulting Travel Analysis Report (TAR) must be consistent with existing land management plan direction. The Inyo National Forest is currently undergoing Forest Plan Revision, which is planned for completion in 2016. Because the TAP and Forest Plan Revision are occurring simultaneously, their processes are being used to inform each other. For example, as part of the Assessment phase of Forest Plan Revision, the Forest created a GIS layer of all of the known developed and dispersed recreation sites, as well as administrative facilities and recreation residences on the Forest. That data was used in the TAP to determine recreational benefits of the analyzed roads. Because the TAP should be completed before Forest Plan Revision is completed, the results of the TAP may be used to help inform Forest Plan Revision. The 2005 Travel Management rule and the 2012 Planning rule are separate regulations and are not interdependent. The completion of Travel Analysis is not required for a plan revision.

## Role of Specialists

The analysis team was an interdisciplinary team (IDT) assigned by the Inyo National Forest Supervisor, Ed Armenta, who is the Responsible Official for the TAP. The IDT and their primary disciplines are listed in Table 1.

**Table 1. Travel Analysis Process Interdisciplinary Team (IDT) Members**

Name	Resource Area
Jaqueline Beidl	Heritage/Cultural Resources
Todd Ellsworth	Soils/Hydrology
Sue Farley and Dale Johnson	Vegetation Management/Fuels
Marty Hornick	Recreation and Motorized Travel Management
Sheila Irons	Special Uses and Lands
Amanda Moore and Dan Yarborough	Geographic Information System (GIS)
Erin Noesser and Leeann Murphy	Team Lead
Richard Perloff	Terrestrial Wildlife
Katy Rich	Visuals/Landscape Architecture
Tammy Scholten and Olin Beall	Engineering/Transportation Facilities
Lisa Sims	Aquatic Wildlife
Alan Taylor	Fire Suppression
Sue Weis and Kathleen Nelson	Botanical Resources



The team developed analysis criteria for each resource area, and rated each road based on a combination of GIS screening results, previous surveys for each resources, and on-the-ground knowledge of road conditions. Initial rankings were created for most resources using existing GIS layers, then modified based on each specialists' knowledge of the resources. Methods for the analysis are discussed in depth later in this report and in Appendix D. After all resources were ranked, the specialists worked as an interdisciplinary team to identify opportunities, priorities, and recommendations for each road.

## Information Sources

Existing information was used for the TAP. No new information was collected on the ground. However, recent monitoring results are used, as well as all data known to exist as of December 2014. This draft Travel Analysis Report (TAR) will be informed by public involvement before the final TAR is released. Further, even after it is finalized, the TAR may be revised as more information becomes available. For example, the Forest's database of locations for special use permits is not complete, and if the Forest can obtain more spatial data about roads used by utility companies and other permit holders in the future, the TAP can be adjusted to reflect that new information.

The following sources of information were used in this analysis:

- Forest Service Infra roads database.
- Geographic Information System (GIS) databases containing the transportation system, land ownership, vegetation management projects and conditions, wildlife, botanical resources, invasive plant species, cultural resources, fisheries, streams, wetlands, Recreation Opportunity Spectrum, Wilderness, Inventoried Roadless Areas, road condition, administrative facilities, recreational facilities, and mineral resources.
- Budget information about funding allocated to roads in prior years (including grants and other non-Forest Service funds) and costs for maintaining the road system to standards.
- Wildland fire response plans, vegetation management plans, and fuels treatment plans.
- Special use authorizations.
- Easement, right-of-way, and other legal instrument data from historical records held on the Forest.
- GIS results of the 2009 Inyo National Forest Motorized Travel Management Record of Decision.
- Monitoring data from 2009 Travel Management Implementation collected by field crews, from 2010 through 2014.
- Decisions from 2010 through 2014 for projects related to motorized travel management (Mono Craters, Upper Owens Bishop Creek, Sierra Front OHV, and Wilderness Unauthorized Route Restoration Projects. [Inyo National Forest 2013a, b, c, d, e and 2014a, b, c, d]).
- Information gathered for the Forest Plan Revision Assessments for infrastructure and recreation. Inyo National Forest 2011, Inyo National Forest 2006, Dunfee 2013, Farley 2013)
- On-the-ground knowledge of road conditions, benefits, risks and other resource information.

## Chapter 2 – Describing the Situation

### Existing Land Management and Travel Management Direction

The 2009 Travel Management Final Environmental Impact Statement (FEIS) included the background and history of travel management on the Inyo National Forest (Inyo National Forest 2009a, Chapter 1). That history is summarized below.

### Inyo National Forest Plan Direction

The 1988 Inyo National Forest Land and Resource Management Plan (LRMP or Forest Plan) includes direction to designate off-highway vehicle (OHV) routes by updating the 1977 Interagency Motor Vehicle Use Plan, evaluate routes on the basis of affected resources, limit vehicle access to designated routes, and to close routes with irresolvable resource impacts. That process was completed through several efforts since 1988, including the 1989 Mono Basin Scenic Area Plan, the 1991 High Desert OHV Plan, and most recently, the 2009 Travel Management decision.

The 1988 Forest Plan states that the Forest’s goal for infrastructure is, “an efficient Forest transportation system; administrative sites, and other facilities are in place and maintained at least to the minimum standards appropriate for planned uses and the protection of resources.”

Standards and Guidelines below are directly relevant to road management and therefore the TAP. The Forest Plan also contains many other standards and guidelines relevant to protecting resources that are also applicable, but are not specifically related to roads. Those are not summarized here, but are considered in this analysis:

### 1988 Inyo National Forest Land and Resource Management Plan (Forest Plan)

Cultural Resources (pp. 75-76)

- Develop and implement strategies including road closures for the protection of cultural sites.

Facilities (pp. 77-78)

- Provide public access to public land and developed recreation sites, consistent with Forest goals and objectives.

Off-highway vehicles/over-snow vehicles (OHV/OSVs) (pp. 87-88)

- When necessary, close critical wildlife and fish habitat to OHV/OSV use.

Riparian Areas

- Relocate existing roads, trails, and campsites outside riparian areas when necessary to eliminate or reduce unacceptable deterioration of riparian-dependent resources.

Timber

- Close or, where possible, obliterate unneeded roads to preclude resource conflicts, while considering OHV opportunities.

### **Sierra Nevada Forest Plan Amendment - 2004 Record of Decision**

The Sierra Nevada Forest Plan Amendment Record of Decision and final Supplemental Environmental Impact Statement (USDA 2004) amended the Land and Resource Management Plans for the eleven National Forests in the Sierra Nevada range, including the Inyo National Forest. Therefore, the Forest must also follow direction from the Amendment.

#### Desired Conditions for Wildland Urban Intermix Threat Zones (p. 40)

Threat zone boundaries are determined at the project level following natural, regional and forest policy..... Fuels treatments in these zones are designed to reduce wildfire spread and intensity. Strategic landscape features, such as **roads** (emphasis added), changes in fuel types, and topography may be used in delineating the physical boundary of the threat zone.

#### Standards and Guidelines for Noxious Weed Management (p. 55)

39. When recommended in project-level noxious weed risk assessments, consider requiring off-road equipment and vehicles (both Forest Service and contracted) used for project implementation to be weed free. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.

#### Standards and Guidelines for Northern Goshawk Protected Activity Centers (PACs) (pp. 60-61)

82. Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance).

#### Standards and Guidelines for Marten Den Sites (p. 62)

89. Mitigate impacts where there is documented evidence of disturbance to the den site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance).

#### Standards and Guidelines for Riparian Conservation Areas (pp.63-65)

100. Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity.

101. Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to instream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands and other special aquatic features.

116. Identify roads,.....during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions.

### **Travel Management Rule**

The 2005 Travel Management Rule, Subpart A (36 CFR 212, Subpart A), requires identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest lands. It requires use of a science-based roads analysis at the appropriate scale in determining the minimum road system. The Travel Analysis Process is not meant to identify the minimum road system, which would require a decision following the guidelines of the National Environmental Policy Act (NEPA). It is, however, a science-based roads analysis and intended to be a step toward identifying the minimum road system. It analyzes the current road system at the Forest scale and this TAR makes recommendations about the possible opportunities and priorities for roads on the system.

The 2005 Travel Management Rule, Subpart B included provisions for designating a transportation system on the Forest, and led to the Forest's 2009 Travel Management Decision.

### **2009 Travel Management Decision**

In August 2009, a Record of Decision was issued for the Inyo National Forest Motorized Travel Management EIS, in compliance with Subpart B of the National Travel Management Rule (36 CFR 212.5). This Record of Decision officially designated a system on the Inyo NF for motorized vehicle travel and prohibited motorized travel off of the designated system. As a result, about 886 miles of Maintenance Level 2 roads and 157 miles of motorized trails were added to the Forest Transportation System. Additionally, 173 miles were converted from roads to motorized trails. Another roughly 630 miles of unauthorized routes were not added to the system and were blocked or decommissioned (These numbers are slightly different than those in the official Record of Decision due to minor data clean-up).

The Travel Management decision did not address roads that were already on the National Forest Transportation System (NFTS), unless use or access changed since their designation (Travel Management FEIS, p. 1-5. Inyo National Forest 2009b). The decision was focused on the designation of roads, trails and areas for motor vehicle use in accordance with 36 CFR 212, Subpart B. Travel Management looked primarily at inventoried but unauthorized routes, and determined whether to add them to the NFTS system as roads or motorized trails. This TAP is different in that it analyzes all roads already on the NFTS, and determines the priorities and opportunities for the existing system.

The Travel Management process analyzed risks, benefits, problems, opportunities and priorities for the roads within its scope of analysis, mainly roads that had previously been unauthorized. Roads added as a result of the Travel Management decision are not re-analyzed in this TAP for risks, benefits, opportunities or priorities unless the Forest obtained new information since the Travel Management Decision. An example of new information is new survey results showing a critical resource at risk adjacent to a road, or monitoring showing that a designated route is actually overgrown and does not exist on the ground.

Those routes analyzed in Travel Management (or another subsequent decision) and added to the system, but not re-analyzed in TAP are shown in Table A1 in Appendix A. Those roads are recommended to remain on the system, with the exception of any roads that are only accessible by a road that is recommended as “not needed” in this TAR.

## Existing Road System

The following information is taken from the 2013 topic papers written by the Inyo National Forest to inform the assessment portion of the Forest Plan Revision. Information is from Chapter 9 – Recreation (Farley 2013) and Chapter 11 – Infrastructure (Dunfee 2013).

### Inventory of Roads and Trails

A National Forest System Road (NFSR) is defined as “a forest road, other than a road which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).” A road is defined as “a motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).” Although many roads on the Forest are listed as “County” or “local” roads in the Forest Service Infra database, these are analyzed as part of the National Forest Transportation System (NFTS) if there is no legally documented Right-of-Way or easement.

The existing transportation system on the Inyo National Forest includes not only NFTS roads, but also roads managed by State, County, the Los Angeles Department of Water and Power (LADWP) and other federal agencies, as well as private entities. The total mileage of roads on the Forest shown in our Infra database is 2,710 miles. However, about 200 miles of roads are either not on Forest land (on inholdings such as LADWP or private land) or are State or Federal Highways and not under the jurisdiction of the Forest Service.

Cooperation among the road managers is necessary to provide effective access to public and private land. This TAR only analyzes those roads under the jurisdiction of the Inyo National Forest for risks, benefits, opportunities and priorities and need, because the Forest has no jurisdiction over other roads. For example, it does not analyze the need for Interstate highways, even though they pass through Forest land. However, it considers the interconnected road system, and discusses any issues with that system.

The database that stores information about roads on the Forest is called Infra (short for Infrastructure). Infra stores information about each road, and the Forest updates information regularly. Data from Infra was used as the starting point for the TAP database. Although the Forest updates the data as changes occur, the data in Infra is often legacy data that has not been truthed on the ground. For example, of about 5,500 road segments in the Infra database, about 950 are listed as being under the jurisdiction of another entity, mostly Counties, but also the State of California, or Local entities such as Los Angeles Department of Water and Power or the Town of Mammoth Lakes. Only about 200 of those have a legal instrument, such as a right-of-way or easement, in place between the Forest and the managing entity. In all other cases, there is no legal instrument in place. In those cases, the Infra database data is not consistent until a legal instrument is in place. The TAP process identifies these inconsistencies, so the Forest can address them.

Roads on National Forest land that are maintained by another entity should typically have one of three legal instruments in place in order to meet Forest Service regulations (36 CFR 251, Subpart D and 36 CFR 261.10, FSM 2730, FSH 2709.12, FSM 7730). The three instruments are easements (FSH 2709, Chapter 40), special use permits (FSH 2709.12, Chapter 40 and FSM 2730), and Cooperative Forest Road Agreement (FSH 1509.11, Chapter 30).

Roads for which another entity has some interest are listed in Appendix E. Table E1 shows roads recorded as being maintained by another entity on Forest land. Table E2 shows roads that are recorded as being under the jurisdiction of another entity, but which are needed to access Forest land.

In addition to NFTS, the Inyo NF contains about 741 miles of roads falling under other jurisdictions or recorded in the Infra database as being maintained by another entity. Some of the roads, such as US and State Highways, are clearly under other jurisdiction. Although not under the jurisdiction of the Inyo NF, use on these roads, road conditions, and maintenance activities on these roads have the potential to impact resources on the Forest. Table 2 presents a breakdown of the 741 miles of roads located on the Inyo NF under the jurisdiction of, or maintained by, other road management agencies. These roads fall within the general Forest boundary, but may be located on private inholdings and not on Forest Service land. For those that are maintained by another entity, but under the Forest's jurisdiction, the Forest usually maintains jurisdiction over the road, because the maintaining entity does not make decisions about things such as seasonal closure dates, type of vehicles allowed on the road, or whether commercial uses are allowed.

**Table 2. Roads on the Forest under the jurisdiction of, or maintained by, other road management agencies.**

<b>Road Management Agency</b>	<b>Road segments</b>	<b>Miles</b>
County	189	519
Local (Includes LADWP roads)	323	78
Private	77	19
State Highway	8	77
US Highway	3	51

### Maintenance Levels

All NFTS roads have been assigned a maintenance level (ML). There are five MLs used by the Forest Service to determine the work needed to preserve the investment in the road. These MLs are described in FSH 7709.62.32 *Road System Operation and Maintenance Handbook* and are briefly summarized here:

- ML 1: basic custodial care (closed to motor vehicle traffic). Roads are closed to traffic for protection of a resource, maintenance cost, or other reasons and vegetation may be growing on the roadway. (The Inyo National Forest has only one ML1 road that is less than ¼ mile long).
- ML 2: suitable for high clearance vehicles. Roads are primarily one lane, low traffic, low speed roads and are almost always native surface (Figure 1).
- ML 3: suitable for passenger cars. Roads support higher traffic volumes and are constructed with wider surfaces and longer sight distances for higher speed traffic. Usually native surface or gravel.



- ML 4: suitable for passenger cars, moderate degree of user comfort. Roads support higher traffic volumes and are constructed with wider surfaces and longer sight distances for higher speed traffic.
- ML 5: suitable for passenger cars, high degree of user comfort (such as a highway).



Figure 1. Photo of a typical maintenance level 2 road on the Forest, near Obsidian Dome near Mammoth Lakes.

Roads that are listed in Infra as being under the jurisdiction of, or maintained by another entity have not been assigned a maintenance level, even if those roads have no legal instrument in place authorizing the maintenance by another entity.

All levels of roads should have drainage and erosion protection features that are maintained to protect water quality. A low maintenance level does not mean that the road is left to cause resource damage, but that it is not maintained for user comfort. Currently, the Inyo NF Forest Road System contains about 2,015 miles of existing National Forest System Roads under Forest Service jurisdiction. Miles of road by operational maintenance level are provided in Table 3.

**Table 3. National Forest System Roads, displayed by operational maintenance level.**

<b>Maintenance Level</b>	<b>Miles</b>	<b>Percent</b>
1	0.2	.01%
2	1881	93.3%
3	66	3.3%
4	37	1.8%
5	30	1.5%
<b>Total</b>	<b>2,015</b>	<b>100%</b>

As shown in Table 3, the vast majority of roads on the Forest are ML2, which have relatively low maintenance costs and receive only infrequent maintenance as needs are identified. Maintenance on these roads can include cutting out trees, cutting brush to make the road more passable, and improving draining to prevent erosion.

There are also about 33 miles of roads located outside of the administrative boundary. This total includes miles of roads located on land where the ownership status has recently changed or at administrative facilities located outside the administrative boundary. Additionally, of the 1,985 total miles of National Forest System Roads under Forest Service jurisdiction, about 50 miles are considered administrative roads and are closed to public access.

On the Inyo NF, all ML 2 roads are open to both highway-legal vehicles and non-highway-legal motor vehicles except for 45 miles which are open to administrative access only. Non-highway-legal motor vehicles are not permitted on ML 3 – 5 roads with the exception of portions of two roads (Glass Creek and Sawmill Cutoff) on which both highway-legal and non-highway legal motor vehicles have been approved for use by the California Highway Patrol (CHP). CHP approval for this mixed use is documented on file at the Inyo NF Supervisor's Office.

The condition of each ML 2 road is assessed at least every 5 years by trained staff following a monitoring system set forth in the 2008 Soil Conservation Standards and Guidelines from the California State Off Highway Motorized Vehicle Recreation (OHMVR) division (often called Red/Yellow/Green monitoring because each road is assigned a color rating corresponding with its condition). This monitoring is required to receive State OHV funding. Factors such as water control, off-road erosion, tread wear and tread width, and outboard fill are taken into consideration when assigning a color code of green (low resource impacts) yellow (moderate resource impacts) or red (major resource impacts). The results of these surveys were used to help determine the hydrologic risk of roads and to help determine priorities and opportunities for ML 2 roads.

Condition assessment surveys for Maintenance Level 3 - 5 roads are conducted by the Inyo National Forest Engineering Department annually on a randomly selected subset of roads determined by the Regional Office. Of the 134 miles of Maintenance Level 3 – 5 roads in the Forest Road System, 54% are paved, 19% are surfaced with aggregate material, and 27% have a native surface. The aggregate and native surface roads require minimal routine maintenance and could generally be classified as being in



good to moderate condition. With the exception of a few miles of paved roads that have been resurfaced within the past few years, the paved roads could generally be classified as being in moderate to poor condition. Most of the paved roads on the Forest contain numerous potholes, freeze-thaw cracking, heaving, and raveling of the edges.

### **Road Management Objectives**

Road management objectives document the intended purpose of an individual road in providing access to implement a land and resource management plan, as well as decisions about applicable standards for the road. Road management objectives are based on management area direction and access management objectives. Road management objectives contain design criteria, operation criteria, and maintenance criteria (Forest Service Handbook 7709.59, Chapter 10).

The Inyo National Forest has created 11 different Road Management Objective templates into which all roads fit, based on road maintenance levels and management area direction. Roads are either fit into standard Road Management Objectives for their maintenance level, or if they are in areas with special direction, such as sage grouse or mule deer habitat, they receive a “restricted” objective, which limits either the timing of maintenance or use or the type of maintenance or use.

The 11 Road Management Objective templates are general, and the Forest plans to use the results of this TAP to create more specific Road Management Objectives that will help the Forest more efficiently plan maintenance schedules and methods.

### **Assessment of existing motorized and non-motorized uses and access needs.**

The transportation system on the Inyo NF has evolved over time, with many roads and motorized trails beginning as user-created wagon roads from the California gold rush period of the mid-to-late 1800s. As the use of roads expanded and modes of transportation changed, many of the user-created roads were reconstructed to higher standards. Routes which were created for the sole purpose of permitted resource extraction, such as mining or timber roads, were considered “temporary” roads, which would be unneeded after the permitted use ceased. Accordingly, these were generally not added to the Forest Transportation System. Increasing and unmanaged off-highway vehicle usage in the past few decades also led to significantly more user-created routes that were not part of the official Inyo NF transportation system.

The 2009 Inyo National Forest Motorized Travel Management Environmental Impact Statement (EIS) analyzed the temporary and user-created routes in existence that were not part of the Forest Transportation System and considered non-system routes. The analysis considered the contribution of the routes to the administration and use of the Forest and their respective environmental concerns. As discussed previously in this document, The Record of Decision added a number of miles of these non-system routes to the Forest Transportation System while closing others to motorized vehicle usage.

### **Environmental, social and other issues**

The number of Forest visits, purpose of the visit, and the most popular recreation activities enjoyed by visitors to the Inyo are reported from the surveys completed for the Forest Service National Visitor Use Monitoring (NVUM, 2006 and 2011). In 2006, 2.86 million visits were made to the Inyo NF, while 2.53 million visits were recorded in 2011. From the NVUM surveys, the majority of visitors stated the purpose

of their visit to the Inyo NF was for recreation. Downhill skiing, viewing natural features, hiking or walking, relaxing and viewing wildlife were the top five recreation activities enjoyed by visitors to the Inyo National Forest, as indicated in the NVUM surveys.

All of those opportunities may be accessed by roads, though many sites, such as resorts, are accessed by State Highways or other non-NFTS roads. While many of the popular activities are accessed by National Forest System Roads, the NVUM showed that between 27 and 29 percent of users (2006 and 2011, respectively) responded that an activity they participated in was driving for pleasure. This indicates that use of roads themselves, regardless of destination, is a popular visitor activity on the Inyo National Forest.

The Inyo National Forest is made up of over two million acres and includes over one million acres of designated wilderness, which is mostly roadless and where no motorized vehicle use is permitted. The City of Bishop and the communities of Benton, Big Pine, Independence, and Lone Pine lie between the eastern and western segments of the Forest. Access between communities is generally accomplished via US or State Highways, portions of which are located on the Inyo NF. Visitors to the Inyo NF generally utilize County roads or roads crossing BLM and LADWP land to then access the Forest via National Forest System Roads or Trails.

The economy of the Eastern Sierra is primarily based on tourism. A large percentage of this tourism is recreation based on the Inyo National Forest. Consequently, the Forest Transportation System is very important to the public as it is the primary means for access to the Forest. The public uses the transportation system to access activities such as camping, fishing, hunting, hiking, backpacking, mountain biking, rock climbing, sight-seeing, skiing and snowboarding, snowmobiling, driving off highway with Off Highway Vehicles, and visiting historic and natural interest areas. The Forest Transportation System is also used by the public for personal and commercial fuel wood gathering, by permittees for mining, geothermal exploration, operation and maintenance, and grazing uses, and for traditional Native American uses. In addition to facilitating the above uses, the Forest Transportation System is also used in an administrative capacity by Forest Service staff for fire suppression, fuels management, and forest health management. Roads are also used by visitors engaging in non-motorized activities, such as hikers, mountain bikers, and equestrian users, with varying levels of these uses depending on the area of the Forest. Near towns that are within the Forest, such as Mammoth Lakes and June Lake, roads are more often used for non-motorized uses than in more remote parts of the Forest.

Conversely, roads have the potential to impact various resources managed on the Forest, especially if poorly located or improperly maintained. Roads can cause habitat fragmentation which can have a negative impact to wildlife species. Improperly designed drainage structures can present a barrier to aquatic species movement. Roads and their use can increase the spread of invasive species. Roads can impact water quality by concentrating runoff and contributing flow directly to a natural waterbody. Stream crossings are the most frequent location of adverse road and trail impacts to water, aquatic, and riparian resources. (R5 FSH 2509.22, Section 12.2)

Soils on the Inyo National Forest are generally of high permeability with low clay content, with some exceptions. High permeability soils have relatively low surface runoff, so roads in these soils tend to have less rilling and erosion than in other environments such as the western slope of the Sierra Nevada or coastal Southern California. Although there is erosion, rilling, and gullyng of roads on the Forest, in

general, roads tend to be more stable than on many other California National Forests.

### **Summary of available accident and law enforcement data**

No accidents have been reported on Forest roads by the California Highway Patrol in the past ten years, (Richard Watt, Inyo National Forest Law Enforcement Officer, Personal Communication, February 2015). However, this does not mean that there have been no accidents; just that no one has reported them to the California Highway Patrol or the Forest. This does not include accidents on highways that cross Forest lands, which are under the jurisdiction of the State of California.

### **Available budget to maintain and operate the forest transportation system**

The Inyo National Forest receives road funding from three principal sources. The first source is funding appropriated from the federal budget process. These funds are identified by Congress for three categories of expenditures: general road maintenance, road decommissioning, and capital improvement projects. The Inyo National Forest primarily receives funding in the general maintenance category (called CMRD). This source provides the majority of funds for the administration, operation and maintenance of the road system. Appropriated funds for road operation and maintenance on the Inyo National Forest have decreased from \$890,000 to \$545,000 per year from 2009 through 2014 (Figure 2). The Regional Office has revised the funding allocation model. Based on the proposed model the road maintenance budget will be reduced to a funding level stabilizing at \$503,000 by 2017. These allocated funds include the cost of overhead. Overhead expenses include supervisory and administrative duties, and use about 25% of the allocated funds. Therefore, beginning in 2017, roughly \$377,000 of allocated funds will be available for road maintenance. This is only 57% of what the Forest had available for maintenance in 2009, which is a drastic reduction over just 6 years. Appropriated funds are used almost solely on Maintenance Level 3, 4 and 5 roads. Recent trends in funding for road maintenance on the Forest are shown in Figure 2 below.

In some years, the Forest also receives money for “integrated resource restoration”. This is also appropriated money, but the Forest must submit specific projects, usually related to reducing and runoff of roads, to our Regional Office for Region-wide competition. On average, the Forest receives about \$35,000 per year from these funds, but the amount has varied widely in the past five years. The trends in this funding, referred to as “CMLG” are shown in Figure 2 below.

The third major funding source for roads on the Inyo National Forest are grants from the California State Parks, Off-Highway Motor Vehicle Recreation Commission. These grants can be used for road decommissioning, road improvements, monitoring, law enforcement, or road maintenance. On average, the Forest receives about \$100,000 per year for road maintenance from these grants, with additional grants for other road-related actions. This money is used almost exclusively on Maintenance Level 2 roads, because it must be used on roads open to off-highway vehicles (OHVs). The level of funding varies each year, and is not guaranteed, though the Inyo National Forest has been successful in obtaining grants every year for about 20 years and expects to continue to receive these grants. The average of \$100,000 represents a small portion of the total grant funds received, with other funds spent on motorized trails, patrols, public information, maps, and natural resource protection. The trends in OHV Grant funding from 2009 through 2014 are shown in Figure 2 below.

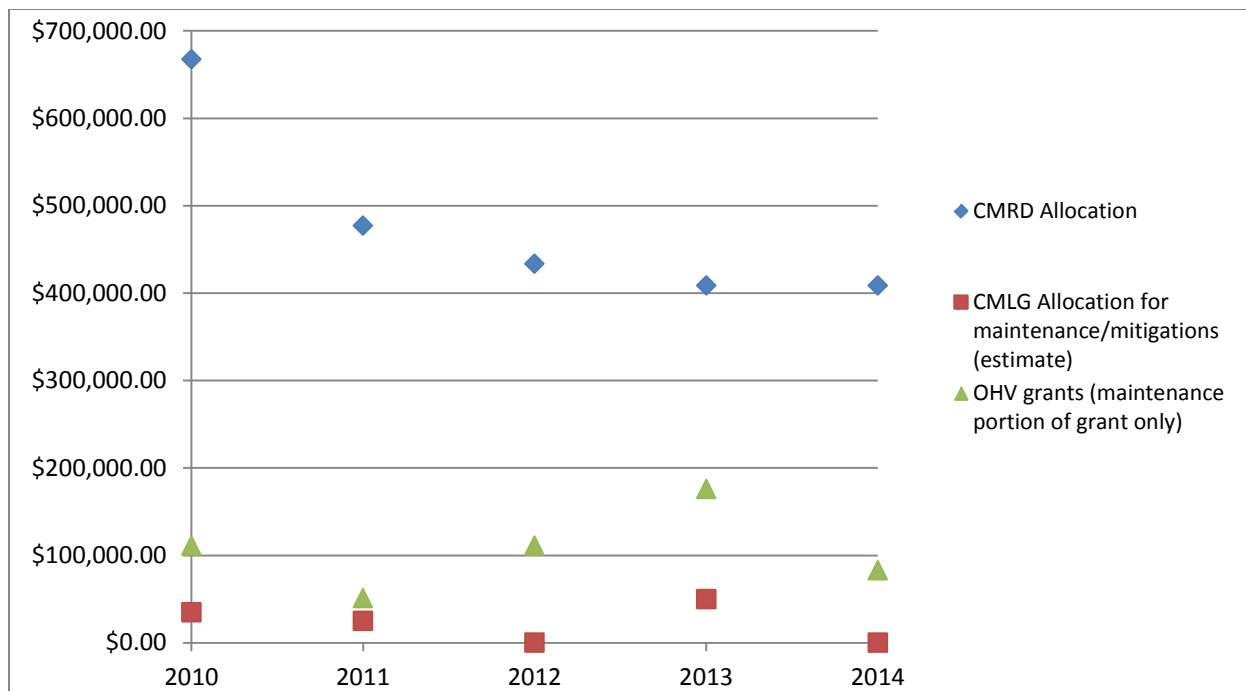


Figure 2. Trend of funding sources for road maintenance from 2010 through 2014. CMRD is appropriated funding for roads maintenance (shown here minus overhead), CMLG Allocation is special funding from Forest Service money, for which the Forest must apply each year, and OHV grants are California State funded grants, used almost entirely for Maintenance Level 2 roads and to which the Forest must apply each year. This table shows data through 2014, but the CMRD allocation is expected to decline to about \$490,000 in 2016 and beyond.

The Inyo National Forest's existing road system costs more to maintain to appropriate standards than the Forest receives from a combination of Federal and non-federal money. Using the calculator shown in Appendix B, the Forest estimated that the annual costs to maintain the exiting National Forest Transportation System to standard would be about \$880,000 (not including overhead). The total funding estimated to be received beginning in 2017 is about \$512,000, or 58% of the needed funds to maintain the existing road system. Therefore, there is about a \$368,000 annual shortage in funding for road maintenance. Road decommissioning, new road construction, and deferred maintenance are not included in the above estimates.

Table B-2 in Appendix B and Chapter 5 include estimates of the future funding and costs for the road system taking into account recommendations in Chapter 5 of this report.

### Unauthorized Routes

Routes open to the public are documented on a Motor Vehicle Use Map (MVUM) in compliance with 36 CFR 212, Subpart B. The map is updated annually or as needed to show the roads open to the public for motorized use and includes information on the types of vehicles allowed on each route. Unauthorized route, including user-defined or decommissioned routes, are not shown on the MVUM. This analysis does not include those routes because they are not part of the transportation system. Unauthorized routes that were inventoried in 2004 and 2005 were analyzed in the Travel Management process and a

decision whether or not to add those routes was made in the 2009 Travel Management Record of Decision (ROD). Any unauthorized routes currently in use that were not analyzed in Travel Management were established illegally and users cannot expect the routes to be legitimized.

## Chapter 3 – Identifying Issues

### Purpose

Identification of issues was the first step in identifying the key resources that are affected by NFTS roads to be analyzed in the TAP. Some resources are affected negatively by roads, while others are affected positively. This chapter identifies the resources that were examined for each road to determine risks, benefits, opportunities and priorities.

### Identifying Issues

To identify issues and resources of concern, the Forest began with the issues identified in the 2003 RAP process (Inyo National Forest 2003, pp. 36-43), and then ensured that those issues covered the topics required in the Region 5 TAP Guidebook (USDA 2012). Then, based on information gathered from the public during the Travel Management Process, the Forest refined that list, adding or removing some of the resources to be analyzed. The issues identified in this draft are preliminary, and will be informed by public comment throughout the process.

There are seven main issues associated with roads on the Inyo National Forest. They are listed below, along with the resources analyzed to address the issue. A much more detailed discussion of the resources analyzed and the reasoning for including them in the TAP is in Appendix C.

#### *1. There may be inadequate resources for maintenance of existing system roads*

The Forest needs adequate funding to maintain the road system to provide adequate, safe access while protecting environmental resources. Due to increasing use of the Forest's roads and decreasing budgets, the existing system is not sustainable. Partnerships have been and will continue to be essential to providing maintenance for a network of roads that provides access to public and private lands. Key attributes analyzed for this issue are:

- Road operations issues
- Road level of development

#### *2. The road system needs to provide commodity production, special use and private land access*

The Forest administers permits for utilities to cross Forest land to fulfill their mission of providing services to the public and private developments within the area. These permits allow access roads for maintenance of infrastructure of these utilities. The Forest also administers grazing allotments, mining activities, scientific installations, resorts, and other special uses. Some private land owners also must cross Forest land to reach their property. Some of the roads providing access to these uses are open to the public while others are available only to the permit holder. Key attributes analyzed for this issue are:

- Grazing access
- Special use permit access
- Access to mineral resources
- Private land access

- Access to forest products (fuel wood and timber)

### ***3. The road system needs to provide access to recreation on the Forest***

Recreation access is a priority for the INF to assure both public and permitted uses are adequately served by the road system. Some members of the public would like to see more access for motorized recreation, while others would like to see less access for motorized recreation to allow for uninterrupted “quiet” recreation such as hiking, equestrian uses, or bicycling. Key attributes analyzed for this issue are:

- Recreation Opportunity Spectrum consistency
- Forest Service administrative facility access
- Dispersed recreation access
- Developed recreation access

### ***4. The road system needs to provide access to manage vegetation, fuels, and fire***

Forest Plan desired future conditions and the Forest’s Fire Management Plan require access to many parts of the Forest for proper implementation. The number and standard of roads needed to manage vegetation, fuels and fire vary over time and depend on vegetation types, location of communities and infrastructure, and treatment methods needed. The following attributes are analyzed for this issue:

- Fire and fuels
- Forest Health

### ***5. The road system needs to provide access for traditional Native American practices and protect cultural resources***

Access to forest areas for traditional Native American practices, including hunting, collection of plants and animals, and access to spiritual and ceremonial locales, is a desire commonly expressed by tribes. Roads can provide access to these locations, but can also allow public access to sites that could affect traditional uses or damage heritages sites. The following attributes are analyzed for this issue:

- Tribal Interests
- Heritage Resources

### ***6. The road system allows motorized users to access and alter the character of special status areas, such as Designated Wilderness, Inventoried Roadless Areas, or Research Natural Areas***

The road system provides important access to Wilderness boundaries for non-motorized uses such as hiking or equestrian use within the Wilderness. However, motorized and non-motorized wheeled vehicles are prohibited in the Wilderness. The Forest Plan requires protection of Wilderness resources and Wilderness character. Many members of the public also have concerns with roads in Inventoried Roadless Areas (IRAs). IRAs do contain existing roads, and roads are not prohibited in IRAs. However, the 2001 Forest Service Roadless Rule (36 CFR Part 294) does prohibit most road construction, reconstruction and timber harvesting in IRAs (with some exceptions). Therefore, the TAP looks at potential for effects to IRA character. The following attributes are analyzed for this issue:

- Wilderness Resources
- Research Natural Areas and Special Interest Areas
- Inventoried Roadless Areas

#### *7. Roads may cause impacts to natural resources*

Road can impact natural resources in many ways, though they can also provide access for appropriately managing the same resources. Addressing these impacts in planning, design and maintenance of the road system is required in the Forest Plan. A sustainable road system includes environmental as well as economic sustainability. The following attributes are analyzed for this issue:

- Watershed
- Riparian vegetation
- Hydrology
- Invasive plants
- Rare plants
- Terrestrial wildlife
- Aquatic wildlife



## Chapter 4 – Assessing Benefits, Problems and Risks

### The Analysis Process

Using the issues discussed in Chapter 3, the interdisciplinary team and Forest Supervisor developed a list of attributes to analyze for risks and benefits related to the road system. Those attributes are listed in Chapter 3, under the issue they address. Each attribute was considered as a benefit or risk, as shown below.

Benefits take into account values identified by the TAP team as well as through public engagement. Past roads projects, including the RAP and Travel Management, informed the Forest's benefit categories assigned to roads. An example of a benefit category is dispersed recreation. Because roads provide access to dispersed recreation opportunities, they benefit that resource.

Risks are either actual known detrimental resource effects from a road (problems), or more commonly, potential risks based on proximity to sensitive resources. For example, if a road is known to have erosion, that is classified as a problem. A road is classified as a risk if it passes through a known population of rare plants, but in most cases, there is not a known problem with effects to those rare plants. Because the TAP was mainly a GIS exercise, many of the risks are only potential. For example, a road that passes through a known population of rare plants may or may not be actually affecting the plants. However, the presence of the road increases the risk of effects to the plant, therefore, we categorized it as a risk.

Once each road was given a rating for each attribute, we added up all of the benefit scores, and all of the risk scores separately (See Appendix D for an explanation of the GIS process used). Each road therefore has one final score for overall risk and one final score for overall benefit. For the roads that either had very high risk or very low benefit scores, the TAP interdisciplinary team looked closely at that road, determining whether the ratings were accurate and adjusting any ratings that did not capture true conditions on the ground. This was relevant especially for benefit ratings, where the Forest did not have accurate GIS information for many of the categories.

After all roads were rated, the IDT and Forest Supervisor grouped the risk and benefit ratings into categories based on scores. The results of the risk and benefit rating process are shown in Appendix A, Table A3 and are summarized in Tables 5 and 6 below. Maps showing results of benefit ratings are shown in Maps 2 through 7 in Appendix G and results of risk ratings are shown in Maps 8 through 13. For instructions on viewing the maps, see the document, "Instructions for using PDF maps" in Appendix G.

### Criteria Used in Risk and Benefit Analysis Process

Risk and benefit ratings can assist with identification of need for, and determining relative effects of future projects, but additional site specific data will be needed to inform future NEPA decisions.

Criteria for risk were designed to be easily completed through a GIS exercise. In some cases, a risk is only present on a small segment of a road, but the entire road was given the same risk rating. The same is true for benefit ratings. However, many benefit ratings were not assigned by a GIS exercise, but were manually entered by Forest staff based on on-the-ground knowledge or monitoring completed through other processes. The IDT and Forest Supervisor selected the categories shown in Table 4 for analysis of risk and benefit.

**Table 4. Resource Categories for Roads**

<b>Risk</b>	<b>Benefit</b>
<i>Motorized use presents risks to resources in these categories</i>	<i>Motorized uses benefit these categories by providing opportunities</i>
<b>Social/Recreational/Cultural</b>	<b>Social/Recreational/Cultural</b>
Road operations issues – safety and cost	Road level of development
Recreation Opportunity Spectrum consistency	Dispersed recreation
Heritage Resources	Developed recreation
Tribal Interests	Tribal Interests
<b>Special Status Areas</b>	<b>Commodity Production</b>
Inventoried Roadless Areas	Grazing
Wilderness Resources	Minerals
Research Natural Areas or Special Interest Areas	Forest products (fuel wood and timber)
<b>Biological Resources</b>	<b>Special Access</b>
Invasive plants	Forest Service administrative facility
Rare plants	Private Land Access
Terrestrial Wildlife	Special Uses
Aquatic Wildlife	
<b>Watershed Resources</b>	<b>Resource Protection</b>
Hydrology	Forest Health
Watershed	Aquatic Wildlife
Riparian vegetation	Fire and fuels

Two attributes, aquatic wildlife and tribal interests, were assigned both potential benefits and risks from roads. All other attributes were categorized either as having only a risk or only a benefit.

Once the risk and benefit categories were identified, the interdisciplinary team developed a rating system. Each benefit was assigned a number rating, either 0, 1 or 2. Each risk was assigned a rating of 0, -1, or -2. In cases where the Forest staff had no information for a resource, the road was given a “0” rating for that resource. A brief explanation of each attribute and its relationship to roads is given below. For a more detailed explanation of attributes and the rating criteria used, see Appendix C.

For the results of risk and benefit ratings, see Appendix A, table A3.

## Benefit Categories

### *Social/Recreational/Cultural*

#### Road level of development

Roads for which the Forest has invested in paving, adding aggregate, or designating as a higher maintenance level have been identified as having a benefit simply by those actions. In some cases, the roads do not also have a corresponding, identified recreation, forest products, fire, or other benefit, and therefore the TAP team felt that it was important to give a benefit rating to roads with a higher level of development.

**2** - Roads with high level of development

**1** – Roads with moderate level of development

**0** – Roads with low level of development

#### Dispersed recreation access

Dispersed recreation is an important and widespread use of Inyo National Forest land. Dispersed recreation includes off-road driving, dispersed camping, undeveloped day use areas and vista points, climbing areas, backcountry ski areas, and other sites of undeveloped recreational use. The Forest does not have accurate GIS data for dispersed recreation, as existing information is sparse and incomplete. The Forest assumes that dispersed recreation opportunities exist along almost every road, but only included a benefit rating if there was a known high or moderate value dispersed recreation site adjacent to the road or its terminus.

**2**- high value roads accessing important recreation opportunities and experiences, based on estimated use levels.

**1**- Moderate value roads – road accesses a low to moderate use dispersed recreation area

**0** – Low value roads – there is no identified dispersed recreation opportunities associated with the road (The Forest acknowledged that every road that receives use has some recreation value for motor vehicles users. However, giving all of those routes a value in this exercise would not capture the relative importance of roads for dispersed recreation)

#### Developed recreation access

Developed recreation is another important use on the Forest, which accounts for the majority of the visitor use. The Forest supports a strong tourism industry in the region which contributes to the economic vigor of local businesses and communities. Developed recreation sites can include those administered by the Forest or by private businesses, such as Mammoth Mountain Ski Area. Developed sites include marinas, campgrounds, resorts and lodges, ski areas, picnic areas, swimming beaches, and developed trailheads and day use areas.

**2** – Road is within or accesses a developed recreation site

**0** – All other roads

Note – there is no “1” rating for developed recreation sites

## **Tribal Interests**

Tribal interests are considered as a resource both benefiting from motorized access as well as having risk factors associated with motorized access. Risk criteria are discussed in the next section and benefit criteria ratings are discussed here. Access to forest areas for traditional Native American practices is a need commonly expressed by tribes. Traditional uses include hunting and collection of plant and animal species such as deer, antelope, mountain sheep, rabbits, Pandora moth larvae, brine fly pupae, piñon pine, various bunch grasses, willows, tule and various forbs. Other traditional uses include travel to spiritual and ceremonial locales. Motorized roads and trails can provide critical access for Tribal elders to areas that they might not otherwise be able to access.

**2** – Numerous tribes or tribal members have indicated the road provides important access for traditional activities.

**1** – One or a few tribal members have indicated the road provides important access for traditional activities.

**0** – No tribal interest in the road is known

## **Commodity Production**

### **Grazing**

Grazing is an important land use permitted on the Inyo National Forest, with active allotments covering about 30% of the Forest. Currently, there are 38 active cattle, sheep or horse grazing allotments on the Forest. In 2012, 4,717 head of cattle and 15,350 head of sheep were permitted to graze at various times throughout the year on the Forest, with the primary grazing season between June 15 and September 30. Roads provide access for maintenance of grazing improvements such as troughs, water tanks and fences, though are not needed to access all portions of an allotment. Benefits to range focused on accessibility for allotment management.

**2** - High Benefit or Multiple Benefit Roads –Use of these roads is critical for allotment management by permittees and Forest Service personnel.

**1** - Beneficial Roads – Secondary access routes. These routes provide useful access for allotment management, especially by Forest Service personnel, but are not critical for accomplishing range-related work.

**0** - No Benefit Roads – Contribute very little or no benefit for range, or do not pass through or lead to any grazing allotment.

### **Minerals**

Current mining activity on the Inyo NF generally consists of exploration, production, and milling activities. Exploration is active in the Mammoth Lakes Basin, Truman Meadows, and Mazourka Canyon. Exploration activities consist of underground and surface sampling, exploratory drilling, and metal detecting. Production is active at the Black Point Cinder Mine. Milling is active near Lee Vining at the US Pumice Mill Site. Most mining activities need some

road access because heavy equipment or tools are used for mining.

**2** - Roads needed to access mine locations with recent activity or significant interest

**1** - Roads needed to access mine locations with some recent interest

**0** – all other roads

### Forest Products

Forest products include timber and fuel wood. Though much of the Forest is open to fuel wood gathering, most forest product collection and harvesting occurs north of Mammoth Lakes. The Mammoth Lakes – June Lake area east toward Glass Mountain is the only location on the Forest where active timber management is practiced. Road access is necessary for access to forest products, though in some cases roads can be temporary or users can drive cross-country. These roads should be decommissioned once timber management is completed.

**2** – High benefit or multiple benefit road – primary access roads into portions of NFS lands where forest products may be generated.

**1**- Beneficial roads – secondary access routes that are important for access to forest products, but use is more sporadic.

**0** – No benefit – Either in areas that do not generate forest products or relatively short spur roads that are not necessary for access to forest products.

### Special Access

#### Special Uses

There are many permitted special uses on the Forest, including utilities, recreation special uses, apiaries, water systems, recreation residences, scientific installations, and other permitted activities. Roads are needed to access most of these facilities. The Forest does not have information in a GIS system of special use locations on the Forest, and therefore there are likely more roads accessing special uses than are rated.

**2** – Existing permitted activities at destination or along road which do not require a road use permit.

**0** – No known permitted activity along the road segment

Note – there is no “1” rating for special uses

#### Private land access

There are numerous inholdings of private land and Los Angeles Department of Water and Power land within the Inyo National Forest, and a few inholdings of State owned land. Inholdings are either fully or partially surrounded by National Forest land and therefore may require access across Forest lands. The Inyo National Forest does not have as many inholdings as other Forests that have a checkerboard pattern of Forest and private land, but maintaining legal access to private land is an important consideration for some roads.

**2** – Road necessary for access to private land. Either the only access road or road accessing a portion of a large piece of private land, or known to be the main access route.

**1** – Roads providing access to private land, but not necessary. The road is one of two or more access roads.

**0** – Roads not accessing private land. (Note: This was done as a GIS exercise, and captured only those segments of roads directly adjacent to private land .We may have missed some roads that provide access to private lands, but are not touching that land, for example, the major road leading to a shorter segment that accesses the private land may not have been captured in this exercise).

### **Forest Service administrative facility**

Administrative facilities are those listed in Engineering’s database for facilities and in the Forest’s Recreation Sites GIS layer as administrative facilities. Facilities include barracks, administrative buildings, borrow material sites, Visitor Centers, Administrative Cabins, and pack stock facilities. These facilities require road access for maintenance and administrative duties.

**2**- Road is necessary for access to an Inyo National Forest administrative site.

**0** – All other roads.

Note – there is no “1” rating for administrative facilities

### **Natural Resource Protection**

#### **Fire and Fuels**

Fuels management and firefighting and fire prevention are major objectives for managing National Forest land. Fuels management is important for protection of the Forest vegetation and other natural resources, as well as protection of communities and facilities adjacent to Forest land. Roads are used as fuel breaks, and also allow safe firefighter access during fires. Further, roads provide access to areas that receive repeated fuel treatments.

**2** – High or multiple benefit roads – Primary access roads or roads through Wildland Urban Interface (WUI), areas with frequent fires, or recent treatment areas.

**1** – Beneficial roads – Secondary access routes through WUI, areas with frequent fires, or recent treatment areas.

**0** – All other roads

#### **Forest Health**

In this context, forest health issues refer to insect or disease outbreak or potential for such outbreaks. Areas that are susceptible to forest health related problems are forested vegetation types with structures, compositions, and/or densities departed from the potential natural or desired condition.

**2** – High or multiple benefit roads – primary access routes to portions of the Forest with current or potential forest health problems.

**1** – Beneficial roads – Secondary access routes to portion of the Forest with current or potential forest health problems.

**0** – all other roads

### **Aquatic Wildlife**

Aquatic wildlife was considered as a resource both benefiting from motorized access as well as having risk factors associated with motorized access. Risk criteria are discussed in the next section and benefit criteria ratings are discussed here. Aquatic wildlife ratings are based on benefits to threatened, endangered or sensitive fish or other aquatic species. The species considered are listed in the Aquatic Wildlife section of Appendix C .

**2** – The road is necessary for providing access to perform habitat improvement tasks

**1** – The road provides some benefit to access for managing the aquatic resource

**0** – Roads not associated with threatened, endangered or sensitive aquatic species or habitat.

### **Risk Categories**

#### ***Social/Recreational/Cultural***

##### **Road Operations**

As part of identifying a sustainable road system, the Forest considered roads that have operational issues that make them more expensive or more difficult to maintain. Road operational issues can be safety issues, maintenance level inconsistencies, blockage by private landholders, high traffic requiring frequent maintenance cycle, or location of road making maintenance more costly and time-consuming.

**-2:** Roads with safety issues, maintenance levels inconsistent with use, jurisdictional questions causing operational issues, or located in very remote areas where access is difficult and time-consuming for heavy equipment

**- 1:** Roads with higher than normal maintenance needs or location in Nevada or south of Lone Pine.

**0:** All other roads.

##### **Recreation Opportunity Spectrum Consistency**

The 1988 Forest Plan includes Recreation Opportunity Spectrum (ROS) ratings for all portions of the Inyo National Forest. Some of these ROS classes, such as primitive and semi-primitive non-motorized, are intended for areas with no roads at all. Roads in these areas are inconsistent with the ROS class. The semi-primitive motorized ROS class is intended for areas where motorized use is permitted, but a low level of development is expected.

**-2:** Major inconsistency with ROS class (such as any road in a primitive ROS class)

**-1:** Minor inconsistency with ROS class (such as a maintenance level 3 road in a semi-primitive motorized area)

**0:** Consistent with ROS class.

### Heritage Resources

Heritage sites eligible and potentially eligible for the National Register of Historic Sites [historic properties] require federal protection or consideration under Section 106 of the Historic Preservation Act. Cultural properties in and adjacent to roads are more susceptible to damage from vehicle use and road maintenance, and are at increased risks to discovery, looting and vandalism, than sites not located near roads. A road corridor width of 20 meters was used for the analysis, and the Forest considered whether the road has been surveyed for heritage sites. If the road has not been surveyed, we cannot assume there really are no heritage sites.

**-2:** One or more cultural properties documented in the road corridor.

**-1:** No cultural properties are present and the road is less than 90% surveyed.

**0:** No cultural properties are present and 90% or more of the road has been surveyed.

### Tribal Interests

Roads can provide ready public access to sites, such as: increased public traffic or camping in the vicinity of sacred or ceremonial sites, access to and vandalism of sacred sites (such as rock art), and exploitation of traditional plant and animal resources. The actual tribal perceived risk or benefit of an individual road at a given point in time needs to be considered on a case-by-case basis in government to government consultation with tribes. At this time, no roads have been rated for this criteria, but further consultation with tribes may identify some roads.

**-2:** Numerous tribes or tribal members have indicated the road poses risks to the protection of traditional sites or resources.

**-1:** One or a few tribal members have indicated the road poses risks to the protection of traditional sites or resources.

**0:** No tribal interest in the road is known.

### Special Status Areas

#### Wilderness Resources

In accordance with the Wilderness Act of 1964, motorized and mechanized forms of travel are not permitted in designated wilderness. Therefore, any roads in Wilderness are in violation of the Wilderness Act. Some roads that terminate at the Wilderness boundary have had documented issues with Wilderness incursion, while other roads that terminate at the Wilderness boundary simply provide access to a Wilderness trailhead and do not contribute to Wilderness incursions. Roads are only considered a risk to wilderness resources if they are actually in Wilderness (the case for a few roads which have a very small overlap with a Wilderness Boundary, likely due to mapping errors) or monitoring has shown that there is frequent occurrence or high potential for wilderness incursion.

**-2:** Any part of the road is within the Wilderness boundary

**-1:** Frequent occurrence or high potential for Wilderness incursion.

**0:** All other roads



### Research Natural Areas or Special Interest Areas

Forest Service Manual 4063 outlines FS policy for Research Natural Areas (RNAs). These areas are established to protect unique or representative ecosystems for maintaining biological diversity, conducting non-manipulative research, and fostering education. The areas selected should be maintained in a 'pristine' condition as much as possible. (FSM 4063). Roads could possibly affect natural ecological conditions and increase recreation uses. Recreation uses are to be restricted or prohibited if the use threatens the objectives for which the RNA is established.

- 2: A road that is having negative effects on the ecosystem conditions or processes.
- 1: A road is present but does not present a risk and may be useful for some management activities.
- 0: All roads not intersecting an RNA or SIA.

### Inventoried Roadless Areas

Inventoried Roadless Areas (IRAs) do contain existing roads, and roads are not prohibited in IRAs. However, the 2001 Forest Service Roadless Rule (36 CFR Part 294) does prohibit most road construction, reconstruction and timber harvesting in IRAs (with some exceptions). Therefore, the TAP considers these roads as having some risk if they are within IRAs because reconstruction may be more difficult than in non IRA areas.

- 2: The road has a section within an IRA boundary and is causing negative effects to natural resources.
- 1: Road has a section within IRA boundary.
- 0: No part of road is within IRA

### Biological Resources

#### Invasive Plants

Invasive species that are considered high priority include those species rated 'A' or 'B' by California Department of Food and Agriculture (CDFA 2012) and those rated High by the California Invasive Plant Council (CalIPC). Invasive plants can be carried by motorized or non-motorized vehicles, and are more commonly found near roads.

- 2: Road is within 100 feet of a population of a high priority invasive plant species
- 1: Road is within 100 feet of any non-priority, non-native invasive plant population.
- 0: There are no known invasive plant populations located within 100 feet of road

#### Rare Plants

Motorized travel can affect plant and fungi species, their habitats, and natural communities. Effects include, but are not limited to: death or injury to plants; habitat modification; habitat fragmentation; and reduction in habitat quality including increased risk of weed introduction and spread, change in hydrology, increased erosion, compaction, and sediment, risk to pollinators, loss of vegetation, over collection, or other factors reducing or eliminating plant growth and reproduction. This analysis considers sensitive and watch list plants which are listed in the rare plants section of Appendix C.

- 2: Road is within 100 feet of a population of a sensitive plant species that typically occurs in habitats and locations that are susceptible to off-road travel.

**-1:** Road is within 100 feet of an sensitive plant population other than those that typically occur in habitats that are susceptible to off-road travel, or within 100 feet of a population of a watch list species that typically occurs in habitats and locations that are susceptible to off-road travel.

**0:** Area has been surveyed; there are no sensitive plant populations located within 100 feet of road

### Terrestrial Wildlife

Public wheeled motor vehicle use of roads and trails affects wildlife in a wide variety of ways that can generally be placed into three categories: effects resulting from human-caused mortality, effects resulting from changes in behavior (site disturbance), and effects resulting from habitat modification. While these effects may apply to all terrestrial animals, the results may be of greater concern if they occur in habitats of rare species or areas of seasonal concentrations. For this analysis, we assigned a risk rating to roads that occur within habitat of those rarer species (i.e. Federally proposed, threatened, endangered, Forest Service sensitive) or locally important species that are susceptible to site disturbance. These species are listed in the “terrestrial wildlife” section of Appendix C.

**-2:** Road known to be causing disturbance during critical breeding period

**-1:** Road passes through specific habitat types of threatened, endangered, sensitive, or locally important species.

**0:** Roads with no known conflict with special status species or their habitat.

### Aquatic Wildlife

Species analyzed include threatened, endangered for sensitive fish or aquatic species. Roads can have direct or indirect detrimental effects to aquatic species and their habitat. Direct impacts can occur when sediment from a road enters aquatic habitat, or when a road allows public access to an activity that put the species at risk of injury or death. Indirect impacts occur when the road causes effects to habitat such as noise or minor sediment input through blowing dust.

**-2:** Contributes moderate to extensive sediment into the habitat, or provides access to the public for activities that could significantly impact the habitat or individuals of special status species.

**-1:** May have some minimal impact to special status species, primarily undesirable sediment input to the habitat.

**0:** No known impact to threatened, endangered or sensitive species or habitat

### Watershed Resources

#### Watershed

Roads affect watershed condition because roads and road construction contribute high volumes of sediment to streams relative to most other Forest management activities (Grace 2002). Roads directly alter natural sediment and hydrologic regimes by changing streamflow patterns and amounts, sediment loading, transport, deposition, channel morphology and stability and water quality and riparian conditions within a watershed. The TAP Guidebook Appendix E outlines that the analysis of road impacts to watersheds should consider the cumulative effects of roads at a watershed scale. Each watershed received a risk rating based on stream crossings per watershed, route density per watershed, and

density of roads near streams. Every road within that watershed received the rating of the watershed in the “watershed rating” field of the TAP database. The rating is based on an aggregate of multiple ratings.

- 2: High risk to watershed processes
- 1: Moderate risk to watershed processes
- 0: Low risk to watershed processes

### Riparian Vegetation

Roads that are near streams or meadows have a higher risk of sediment and other pollutants entering the stream channel from the road system, or a higher risk of altering the hydrology of a meadow that would affect meadow vegetation. This rating estimates a risk for effects to riparian vegetation. This rating is an aggregate of the percent of the road within 25 feet of a perennial stream channel and the percent of a road within a meadow.

- 2: High risk of effects to riparian or meadow vegetation
- 1: Moderate risk of effects to riparian or meadow vegetation
- 0: Low risk of effects to riparian or meadow vegetation

### Hydrology

Roads that cross streams or have known erosion (rilling, gullies, or other erosion) are the most likely roads to affect water quality and flow on roads. This rating is a combination of the number of stream crossings and the condition of the road. Road condition is known for most Maintenance Level 2 roads and a few higher maintenance level roads. Therefore, this rating may underestimate the hydrologic effect of ML 3, 4 and 5 roads.

- 2: High risk for hydrologic and water quality effects
- 1: Moderate risk for hydrologic and water quality effects
- 0: Low risk for hydrologic and water quality effects

### Jurisdiction

Road jurisdictional issues are not given a numerical “low”, “medium” or “high” rating. However, roads with outstanding jurisdictional issues were identified and placed into the following categories:

1. Acquisition needed – Forest needs access across non-Forest land and does not currently have legal instrument in place.
2. Grant needed – Another entity (County, City, private landowner, or other) needs a legal instrument for use or maintenance of a road on National Forest land and does not currently have a legal instrument in place.

Tables E1 and E2 in Appendix E show roads with some record of a non-Forest Service entity having some interest.

Roads for which non-INF entities already have an easement or right-of-way are not included in the TAP because the Forest does not have jurisdiction over those roads and therefore this TAR does not make any recommendations about their disposition.

## Results of the Risk and Benefit Process

Once risks and benefits were added up for each analyzed road, they were grouped into categories of “low”, “moderate” and “high”, based on the relative ratings. The thresholds for “low”, “moderate” and “high” were developed by the Interdisciplinary Team. The thresholds are based on knowledge of road risks and benefits on the ground, and were defined to have fewer roads in the “low” benefit and “high” risk categories, to ensure that the Forest could focus attention on the “extremes” and capture those roads that clearly fit into those categories. We consider each category a range, and roads within each category may have varied conditions.

The category breaks and the number and mileage of roads in each category are shown in Table 6 and Table 7.

**Table 5** Summary results of overall benefit rating.

Benefit Category	Total Benefit Rating	Number of Road Segments	% by Number	Miles	% by Mileage
Low	0-1	765	36%	313	19%
Moderate	2-4	742	35%	529	31%
High	5-13	601	29%	849	50%
<b>Total</b>		<b>2,108</b>	-	<b>1,691</b>	-

**Table 6** Summary results of overall risk ratings

Risk Category	Total Risk Rating	Number of Road Segments	% by Number	Miles	% by Mileage
Low	0 to -3	1142	54%	514	30%
Moderate	-4 to -7	855	41%	920	54%
High	-8 to -12	111	5%	257	15%
<b>Total</b>		<b>2,108</b>	-	<b>1,691</b>	-

The process used to rate the risk and benefit of the roads skews longer road segments to have high benefits and high risks. That is because longer segments are more likely to pass through more than one risk or benefit factor. For example, if a road segment is 10 miles long, it is more likely to pass through habitat for multiple types of sensitive species, and multiple benefits such as a dispersed recreation site, a developed recreation site, and access a special use permit site. As explained previously, no actions will be taken based solely on these broad-brush ratings, but these ratings may be used as a starting point for future data collection and analysis.

Detailed risk and benefit ratings for each road, including ratings for all attributes, are shown in Table A3 of Appendix A. Maps showing benefit ratings are in Appendix G, Maps 2-7, and risk ratings are shown in Maps 8-13.

## Chapter 5 - Describing Opportunities and Setting Priorities

This chapter describes opportunities to improve the transportation system on the INF.

### Process to develop opportunities and priorities

The IDT added up the risk and benefit ratings, described above, and used them to place roads into one of nine categories for identifying opportunities and setting priorities. In the Travel Analysis guidebook, “opportunities” are defined as the potential options for any alterations are recommended for the road system. The Travel Analysis Report has many roads with no recommended change; the recommendation in those cases is to retain the status quo.

The summary risk and benefit ratings for each road are shown in Table A3 in Appendix A, and on Maps 2-13 in Appendix G.

The Forest identified the following possible opportunities, informed by the TAP guidebook:

1. Change jurisdiction of the road or issue a new permit
2. Change the road’s maintenance level
3. Close the road – may include active decommissioning
4. Maintain
5. Mitigate – includes rerouting or reconstruction

The IDT also used the risk and benefit categories to set priorities for roads. For example, the Forest may recommend to decommission a road because it has a “low” benefit rating. It may be a low priority for decommissioning if it has few risk factors, but a higher priority if it has a “high” risk rating. Or, if a road has a high benefit rating, and also a high risk rating, it may be a high priority for maintenance or other road improvements, to allow safe and sustainable access.

The nine categories developed for opportunities and priorities are described in the matrix below, along with possible recommendations for each category. The Forest will use this information to prioritize road projects. The matrix shows some recommendations for future road maintenance and transportation management decisions. These are general recommendations. The recommendations are a list of possible opportunities; not all roads in that category will need all of the listed recommendations. Project-level analysis teams will analyze the roads in site-specific NEPA projects if the Forest decides to implement a recommendation. The project analysis would include detailed data gathering to support the resource risk and benefits of the road, site specific conditions that can only be obtained by field investigation and public scoping. Alternative methods to address issues can then be developed and the best alternative for access, resource protection, economics and other factors may be presented to the decision maker for consideration.

Table 7: Risk and Benefit matrix – Opportunity and Priority Categories. Although it is not included in any of the categories, reduction of maintenance levels is a potential opportunity for all categories. It would be most likely applied for roads with moderate and low benefit, because they may not need to be maintained to as high a level as roads with higher benefits. However, it could be a useful tool to reduce road maintenance costs for roads in any category.

	Benefits			
	Scores	High	Moderate	Low
Risks	High	<b>Category 1</b> <ul style="list-style-type: none"> <li>Maintenance priority</li> <li>Mitigate/ reconstruct</li> <li>Reroute</li> <li>Remove duplicates when possible</li> </ul> <i>High priority</i>	<b>Category 2</b> <ul style="list-style-type: none"> <li>Maintenance priority</li> <li>Mitigate/ reconstruct</li> <li>Reroute</li> <li>Remove duplicates when possible</li> </ul> <i>High priority</i>	<b>Category 3</b> <ul style="list-style-type: none"> <li>Evaluate need</li> <li>Close/decommission</li> </ul> <i>High priority</i>
	Moderate	<b>Category 4</b> <ul style="list-style-type: none"> <li>Maintain</li> <li>Mitigate</li> </ul> <i>Medium priority</i>	<b>Category 5</b> <ul style="list-style-type: none"> <li>Maintain</li> <li>Mitigate</li> </ul> <i>Medium priority</i>	<b>Category 6</b> <ul style="list-style-type: none"> <li>Evaluate need</li> <li>Close/decommission</li> </ul> <i>Medium priority</i>
	Low	<b>Category 7</b> <ul style="list-style-type: none"> <li>Maintain</li> </ul> <i>Low priority</i>	<b>Category 8</b> <ul style="list-style-type: none"> <li>Maintain</li> </ul> <i>Low priority</i>	<b>Category 9</b> <ul style="list-style-type: none"> <li>Evaluate need</li> <li>Close</li> </ul> <i>Low priority</i>

A definition of each of the recommendations follows:

- *Maintenance Priority* –Recommended as the highest priority for annual maintenance on the Forest. This is a recommendation for roads with high benefit ratings and high resource risks. Maintenance prioritization does not require further analysis under NEPA.
- *Maintain* – Roads that do not need major work, so regular maintenance on a schedule similar to their past schedule is recommended. This is a recommendation for roads with low to moderate risk factors and moderate to high benefits. Maintenance does not require further analysis under NEPA.
- *Mitigate* –Additional work beyond normal maintenance. This could be installing new drainage, adding new culverts or bridges, changing alignment for segments of the road, or implementing other repairs. This is recommendation for roads with high resource risks or known problems and may require further analysis under NEPA.
- *Reconstruct* –Re-design and construct a road or portion of a road. This may mean altering the road grade, drainage features, or making other major changes to the road. This is recommended for roads with major risks or problems, high benefit, and when a reroute is not an option. Reconstruction would require further analysis under NEPA.

- *Reroute* – Move a road or section of a road, but provide access to the same location. In some cases, a road may have a high benefit at its terminus, but is causing major resource problems, and a reroute may be the most efficient means of addressing those problems. A reroute would only be recommended in a few cases where no repair or mitigation could reduce resource problems in its current location, and would require further analysis under NEPA.
- *Remove duplicates when possible* – Duplicates are roads that access the same location. In some cases, duplicates are acceptable and provide their own recreation opportunities. However, in cases where a road has high risk factors or problems, and there is a duplicate road that provides access to the same high value areas, removing the duplicates may be the most efficient solution. In some cases, the remaining access may be via a longer or less convenient path. NEPA would be required.
- *Evaluate need* - Although all roads would be reviewed and analyzed before any changes are proposed, those that are identified as having low benefit need careful review to ensure that the Forest has captured all of the benefits of those roads. The Forest would review all special uses, private land access, and recreational and forest health uses to determine whether the road is a necessary part of the transportation system.
- *Close* – Remove the road from the NFTS and block it to motorized access. It may be open for other uses. Recommended for roads with low benefits that are not needed and would require further analysis under NEPA.
- *Decommission* – Some closed roads, especially those with high risks, would need to be decommissioned rather than simply closed. This means some level of returning the area to its natural state, using methods such as raking out berms, revegetating, re-contouring, or decompacting. Decommissioning would require further analysis under NEPA.
- *Reduce or alter Maintenance Level (ML)* – Maintenance levels can be altered, which would alter the type of maintenance and possibly the maintenance schedule of a road. A reduced maintenance level would mean less maintenance and would be appropriate for a road that receives little use. An increased maintenance level would be appropriate for a road that gets more use than indicated by its existing maintenance level and may need a high level or more frequent maintenance to maintain safety and resource protection. In some cases, this would require further analysis under NEPA. Reduction of maintenance level is a practical strategy for reducing overall road maintenance costs, particularly for ML 3, 4 and 5 roads. It can be considered for roads in any matrix category as long as it would not further increase any negative effects to natural resources. It would be considered mostly for roads with low benefits, and therefore likely less need for access by passenger vehicles. However, reducing maintenance level could be a useful tool to reduce road maintenance costs for roads in any category.

The roads in each opportunity and priority matrix category are listed in Table A4 in Appendix A, in Maps 14 through 19 in Appendix G. The summary of results is in Table 8 below:



Table 8. Results of the benefits, risks, opportunities and priorities matrix. Individual ratings for each road are shown in Tables A3 and A4 in Appendix A of this document.

	Benefits				
	Scores	High	Moderate	Low	Totals
Risks	High	<b>Category 1</b> 76 road segments 208 miles	<b>Category 2</b> 28 road segments 42 miles	<b>Category 3</b> 7 road segments 8 miles	<i>111 segments</i> <i>257 miles</i>
	Moderate	<b>Category 4</b> 370 road segments 534 miles	<b>Category 5</b> 251 road segments 252 miles	<b>Category 6</b> 234 road segments 133 miles	855 segments 919 miles
	Low	<b>Category 7</b> 155 road segments 197 miles	<b>Category 8</b> 463 road segments 235 miles	<b>Category 9</b> 524 road segments 172 miles	<i>1142 segments</i> <i>514 miles</i>
	Totals	601 segments 848 miles	742 segments 529 miles	765 segments 313 miles	<b>2,108 segments</b> <b>1,691 miles*</b>

\*Note: The number of road segments and mileage is less than shown in Table 3 because Table 3 includes all roads on the National Forest Transportation system that are maintained by the Forest Service. Table 8 shows only those road segments fully analyzed in the TAP process.

### Roads Likely Needed and Likely Not Needed for future use

The IDT made a preliminary finding that all roads that the Forest has recorded as no longer in existence, or those in the “low” benefit category (Categories 3, 6 and 9: overall benefit rating of 0-1) are “likely not needed” for future use, with some exceptions. The exceptions are roads that provide the only access to a private inholding of land, roads that provide the only access to a developed recreation site, roads that provide necessary access to a site identified as important for native American tribal uses, roads that provide access to Forest Service administrative sites, or roads that provide necessary access to multiple other roads that are identified as having moderate to high benefit.

If a road was surveyed and found to no longer exist on the ground, or found to be overgrown, we also included it as “likely not needed” for future use. That determination was made because if the road is not receiving enough use to remain passable, it is likely a very low benefit road and not needed. An example of a road determined to be non-existent is shown in Figure 3.

The map of roads that are recommended as “likely needed for future use” and “likely not needed for future use” are shown in Maps 20 through 26 in Appendix G. The list of roads that are “likely not needed for future use” is in Table A5 of Appendix A.



**Figure 3. Photo showing road 02S08G, which was recorded as not existing and is recommended in the TAR as “likely not needed for future use”.**

Overall, the Forest found that 814 road segments totaling about 326 miles of its existing NFTS are rated as “likely not needed for future use” as shown in Table 9 below. The entire transportation system on the Forest has a total of about 5,000 segments and 3,000 miles, of which about 4,200 segments and 1,900 miles are maintained by the Forest Service. The other segments are either maintained by Counties, LADWP, commercial users, private parties, or other Federal agencies. Most, but not all, of these roads are short spurs, or roads that do not provide access to any open routes. The average length of these segments, “likely not needed for future use” is 0.4 miles, with lengths ranging from 0.002 to 3.7 miles. About 75% of these segments are less than ½ mile.

**Table 9. Summary of roads identified as likely needed and likely not needed for future use.**

<b>Likely Future Need</b>	<b>Number of road segments analyzed</b>	<b>Miles of road</b>	<b>% of all TAP roads, by mileage</b>	<b>% of all roads on the NFTS, by mileage</b>
Likely Not Needed	814	326	19%	17%
Likely Needed	1294	1365	81%	83%

The roads included as “likely not needed for future use” are preliminary, and any future decisions about defining the minimum road system would occur only after further more intensive and more site-specific analysis. This recommendation can be considered a starting point for any future planning processes.

In some areas, particularly the Jeffrey Pine area between the towns of Mammoth Lake and June Lake, and in the Casa Diablo area, there is currently a very high road density. Many of these roads were created to harvest timber in past decades. These roads have existed for many years, and therefore uses such as campsites have developed along them, which caused them to receive moderate benefit ratings as part of this process. Therefore, they are rated as “likely needed for future use”. These roads are ideal candidates for reducing to maintenance level 1, which is “storage”. Maintenance level 1 roads are closed to all use, but are closed using methods that are easily reversible so that they can be used again in the future when fuels reduction projects are necessary in the area. This process, with its rapid timeframe and requirement to use only existing data, did not allow for proper investigation into which of these roads would be best reduced to maintenance level 1, or which may not be needed at all in the future. This report recommends that the Forest look at roads more closely in this area, seeking input from the public and Forest staff, and visits the road system on the ground, logically determining the appropriate maintenance levels for each road and whether they are needed to be open or can be put into storage.

This TAP process was not intended to re-analyze the need for roads that were added to the system in the 2009 Travel Management Decision, because the IDT assumed that sufficient information was used in that process to determine the need for roads. However, if the recommendations in this TAR were implemented, road closures would cut off access to 43 small road segments (about 13 miles) that were added in the 2009 Travel Management decision.

### **Jurisdictional Issues**

Roads that currently have no legal instrument in place for permitting maintenance by another entity are legally still part of the NFTS, even if another entity has been maintaining them for decades. Therefore, the road risk and benefit ratings are included in the above matrix.

The roads currently recorded in the Forest Service database as being maintained by another entity are shown in Table E1 of Appendix E of this document. That table shows which roads need a legal instrument in order to be compliant with Forest Service regulations in 36 CFR 251, Subpart D and 36 CFR 261.10, FSM 2730, FSH 2709.12, and FSM 7730. The Forest intends to work with other entities to ensure that legal instruments are in place to formalize maintenance and other uses that have been ongoing for decades.

Because the Forest is unlikely to receive enough funding to maintain the entire necessary road system, partners will be increasingly important for helping to meet road maintenance needs, and the Forest intends to continue and improve those partnerships.

Roads that pass through non-Federal land to access Inyo National Forest land also may be in need of some agreement to ensure access to Forest land by the public and for Forest administrative purposes. Roads where the Forest may need some authorization by a private landowner to continue accessing the Forest are shown in Table E2 of Appendix E.

Finally, there are 318 miles in the Forest's Infra database that are recorded as being maintained by the Forest but are not on Forest land. Most of these roads are on LADWP or BLM land, and the Forest is likely not maintaining any of those miles. As part of the cleanup of the Infra database, the Forest will work with the other agencies to ensure that the appropriate entity is listed.

### **Maintenance Levels**

This TAP process only uses existing information, which was not sufficient to determine all roads that should have changes to their current ML. However, the Forest can currently address the roads where current conditions are obviously inconsistent with the current operational ML. All proposed changes are shown in tables in Appendix F.

The Forest Engineer recommends that it would be more efficient when planning maintenance budgets to break the ML 4 roads into 2 categories; paved and unpaved. Maintaining pavement is much more expensive than maintaining aggregate or native surface roads, and therefore grouping all ML 4 roads into one category is not an accurate representation of true costs for road maintenance. Upon review of some ML 4 roads that are listed in Infra as native or aggregate surface, the IDT found some that are more appropriately ML 4b roads (unpaved) or ML 3. These roads are shown in Table F2 of Appendix F.

Those roads whose maintenance levels (MLs) are currently shown as a 5, or the highest level of development, but are not paved, should have their maintenance levels reduced. A maintenance level of 5 is only appropriate for paved roads (USDA Forest Service, 2005). The Forest found two roads that are listed as Maintenance Level 5, but unpaved, for a total length of about 1.1 miles, as shown in Table F1 of Appendix F.

Many ML 3 roads are recorded as paved in the Infra database. According to the Maintenance Level guide, ML 3 roads are rarely paved (unless paving of some segments is necessary for resource protection). Therefore, we looked at all of these roads on air photos, and recorded whether they are actually paved or not. Then, we looked at their width, their use types (eg – in a campground or a major connector road), and determined whether they should remain ML 3 roads, or are more appropriately considered ML 4a (paved) or 4b (unpaved). Results are shown in Tables F3 and F4 in Appendix F.

While the paved ML3 roads may not currently meet the definition of a ML3 road, the Forest does not recommend increasing the objective maintenance level at this time. It is more realistic, with decreasing budgets, that these roads are treated as ML 3 roads and not maintained to a higher standard. This may mean allowing asphalt to degrade, or even actively removing asphalt instead of repairing it when its condition begins to affect the drivability of the road.

### **Future Economic Sustainability**

Part 1 of the economic calculator shown in Appendix B includes a calculation of the current costs and budget for road maintenance. Part 2 calculates costs and budgets for a future scenario, using the recommendations in this report for reductions in maintenance level and roads likely not needed for future use.

The calculations show little difference between the cost of road maintenance in the current and future scenarios. Though this TAR recommends that about 326 miles of existing NFTS roads are likely not needed in the future, most are Maintenance Level 2 roads that have low maintenance costs. Therefore, the reduction in annual maintenance costs due to road removal is only about \$39,500. The recommended reductions in future maintenance level would reduce annual maintenance costs by another \$38,000. Therefore, the estimated annual reduction in maintenance costs if recommendations in this TAR were implemented would be about \$77,500.

Both the existing and future scenarios of the economic calculator use the expected future funding level of about \$377,000 of allocated funds available for road maintenance, with another \$135,000 from grants and special project funding. The \$135,000 is not guaranteed and this amount will fluctuate in the future. Assuming a future average budget of \$512,000 annually for road maintenance, the current road system would be about 58% funded and the road system recommended in this TAR is about 64% funded. Though implementing the recommendations in this TAR would not allow the road system to approach economic sustainability, they allow for sufficient access and natural resource protection.

## Key Considerations for Road System Sustainability

- **The current Inyo National Forest Road System is not economically sustainable**

The Forest receives about 58% of the road maintenance needs of the Forest are funded, and the road system recommended in this TAR would be about 64% funded. Though implementing the recommendations in this TAR would not allow the road system to approach economic sustainability, they allow for sufficient access and natural resource protection.

- **There are currently relatively few roads with major safety issues (that could be addressed by maintenance) or negative effects to natural resources**

The Forest has been maintaining the road system to address major issues such as safety or repairing important access roads after storm damage, and addressing less pressing maintenance issues as funding allows. Although this has led to some roads causing natural resource damage, the soils types, ecosystem conditions, relatively dry climate, and relatively low use levels on many Forest roads means that on much of the Inyo National Forest, roads cause relatively little natural resource damage. In most cases, the resource “risks” identified in this TAR are only potential risks, and not on-the-ground problems. It is expected that, whether the recommendations in this TAR are implemented or not, there will continue to be relatively few natural resource problems related to roads on this Forest compared to many other places in California.

- **Closing more low-development roads on the Forest (Maintenance Level 2) would have relatively little effect on the economic sustainability of the road system.**



To approach economic sustainability according to the calculator in Appendix B, the Forest could take various approaches. The Forest could recommend drastically reducing the mileage of roads on the Forest, especially the spur roads, and other small, less traveled Maintenance Level 2 roads. However, because maintenance costs of these Level 2 roads is so low, even if the Forest removed all of these roads from the National Forest Transportation System, maintenance costs would still be calculated as more than the annual road maintenance budget. Further, a major reduction in Level 2 roads would reduce access to the point that recreational needs of Forest users would not be met. However the minimum road system to balance economic, access, and natural resource protection needs is likely to be smaller than exists today.

- **Reducing maintenance on more highly developed roads (ML 3, 4 and 5) would allow the greatest reduction in road system costs. However, it would likely reduce the areas accessible by certain vehicle types.**

Maintenance level 3, 4 and 5 roads are far more expensive to maintain than level 2 roads (See Appendix B). The most efficient way to reduce maintenance costs of the road system would be for the Forest to reduce the mileage of paved roads it maintains. This would more efficiently reduce maintenance costs because paved roads are about 4 times more expensive to maintain than unpaved roads of similar width. This could be achieved by attempting to turn over jurisdiction of paved roads to other entities, though in many cases no other entity would have the budget to maintain the roads either. It could also be achieved by allowing pavement to degrade or actively removing pavement. The result of such an action would be to prevent certain vehicle types from using many roads.

### **Other recommendations**

The recommendations in this Travel Analysis Report are a starting point for future planning projects. In many cases, this rapid process did not allow collection of sufficient data to make final recommendations, and the recommendations in this report are therefore preliminary. Some of the findings within this TAR need further investigation to check their validity on the ground, as this exercise was intended to be a rapid, broad brush approach based on existing data.

One of the main findings of this TAR is that information within the Forest's Infra database is incomplete, outdated, and in some cases, incorrect. The investigations made to complete this TAP will be used to update the database, and is an important step toward having a more efficiently managed road system.

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